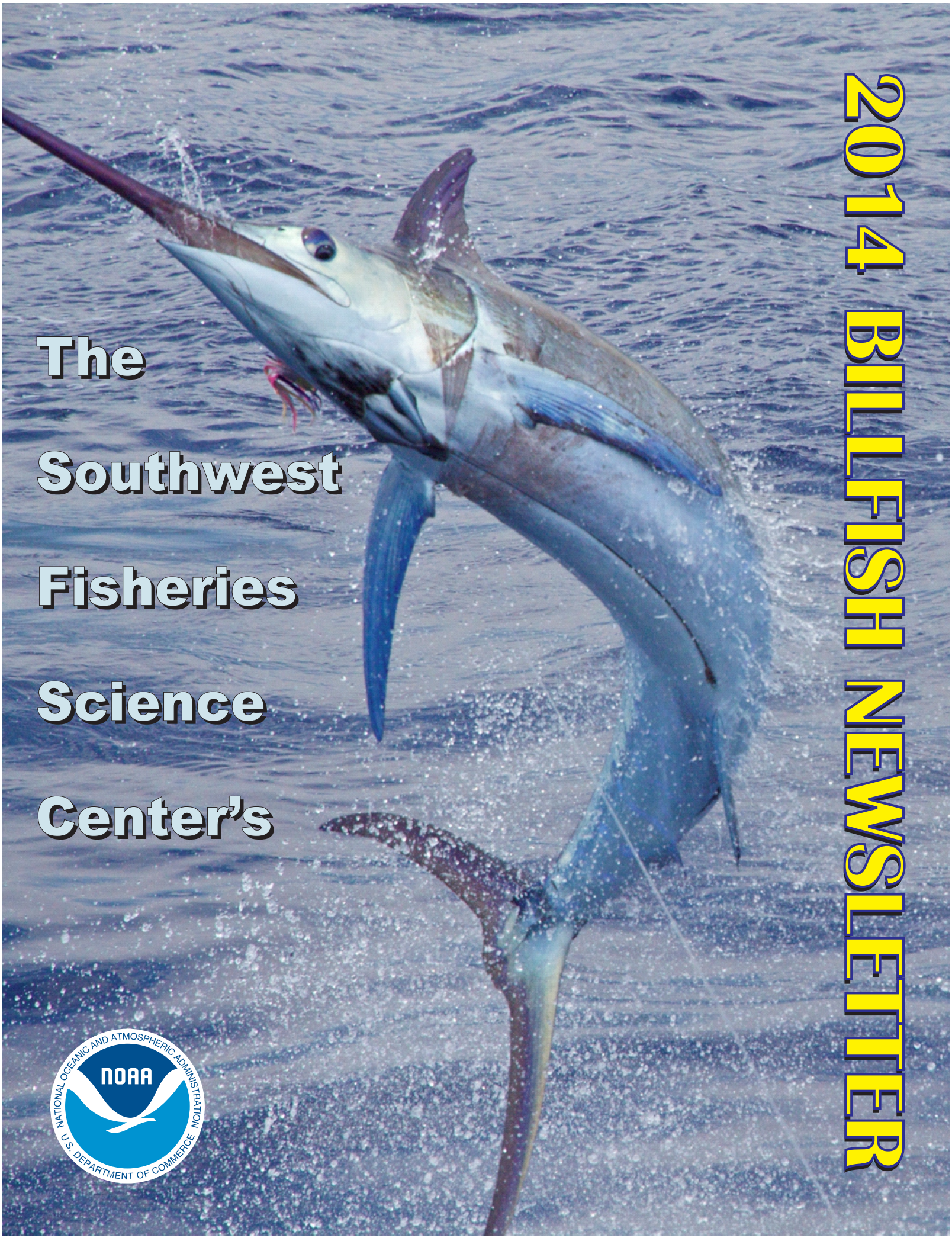

2014 BILLFISH NEWSLETTER
The
Southwest
Fisheries
Science
Center's
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

## PROLOGUE

The annual Billfish Newsletter has been communicating the results of the cooperative efforts between fishery scientists and billfish anglers for over 50 years. The Newsletter presents the results of the Cooperative Billfish Tagging Program, which began in 1963 and has successfully promoted ethical angling while tracking the migration and movements of large gamefish. Additionally, the Newsletter disseminates the results of the International Billfish Angler Survey, in which cooperative anglers have participated since 1969, creating one of the longest time-series of trends in relative abundance for several key species. The combined efforts of recreational anglers and the scientific community are essential to maintaining and assessing the health of billfish stocks. The Southwest Fisheries Science Center remains enthusiastically committed to working alongside billfish anglers to ensure our mutual goals are met.

Dr. Francisco Werner
Director, Southwest Fisheries Science Center

## INTRODUCTION

The Billfish Newsletter describes ongoing billfish research projects conducted at the NOAA Southwest Fisheries Science Center. The results of the 2013 International Billfish Angler Survey and the Cooperative Billfish Tagging Program are discussed in this issue. The data presented are the result of cooperation with recreational anglers, sportfishing clubs, commercial fishers and agencies affiliated with the SWFSC. We express our sincere gratitude to anglers who completed the Angler Survey form and also to those who supported the tag and release of billfish. Your efforts are important in the monitoring and conservation of these magnificent fish.

## INTERNATIONAL BILLFISH ANGLER SURVEY

In order to improve the reliability of the catch and effort statistics we encourage anglers to submit a complete and accurate annual Angler Survey. The Survey form is mailed at the beginning of each year to anglers who have submitted a completed Angler Survey or Billfish Tagging card in the last three years. If you or someone you know does not currently receive the Angler Survey, or if you would like to receive additional forms, please contact us. Alternatively, the form can be downloaded from the SWFSC website: http://swfsc.noaa.gov/FRD-Billfish/. Once completed, forms can be returned by mail or email directly to us.

The results from the 2013 calendar year were collected during 2014 and are presented in this year's edition. Fishing effort (angler fishing days) and catch per unit of effort (CPUE; billfish catch per angler fishing day) are shown by location in **Table 1**. The results are primarily from Pacific locations although anglers also reported some fishing activity in the Atlantic and Indian Oceans. A total of 410 anglers reported their billfish fishing results from 2013 and the overall CPUE throughout all locations was 0.64. In comparison to recent years, the CPUE was relatively higher. The CPUE reported for each of the previous four years (2009-2012) did not exceed 0.50. Moreover, the 2013 result was greater than the overall annual average across all survey years (0.51), and overall median value (0.48).

**Table 1.** Catch and effort reported for the 2013 International Billfish Angler Survey. Numbers indicate total days fished by location, number of billfish caught, and the catch-per-fishing day. The most predominant species caught by area is also listed: striped marlin (SM); blue marlin (BM); black marlin (BK); and sailfish (SF).

| LOCATION | ANGLER FISHING DAYS | NUMBER OF BILLFISH | BILLFISH PER FISHING DAY (CPUE) | MAJOR SPECIES |
|---|---|---|---|---|
| **Pacific Ocean** | | | | |
| Hawaii | 765 | 337 | 0.44 | BM |
| Baja California | 394 | 439 | 1.11 | SM |
| Southern California | 370 | 25 | 0.07 | SM |
| Acapulco/Ixtapa/Zihuatanejo/Guerrero | 122 | 167 | 1.37 | SF |
| Australia | 76 | 33 | 0.43 | BK |
| Costa Rica | 46 | 111 | 2.41 | SF |
| Panama | 44 | 21 | 0.48 | SF |
| Japan | 32 | 13 | 0.41 | BM |
| Manzanillo/Colima | 27 | 13 | 0.48 | SF |
| Puerto Vallarta | 14 | 11 | 0.79 | SM |
| Malaysia | 8 | 52 | 6.50 | SF |
| Guatemala | 7 | 14 | 2.00 | SF |
| Mazatlan/Sinaloa | 6 | 8 | 1.33 | SF |
| Fiji | 4 | 0 | 0.00 | - |
| Galapagos Islands | 4 | 6 | 1.50 | BM |
| Tahiti | 4 | 0 | 0.00 | - |
| Huatulco/Oaxaca | 4 | 1 | 0.25 | SF |
| Tonga | 4 | 3 | 0.75 | BM |
| El Salvador | 3 | 2 | 0.67 | SF |
| Guaymas/Sonora | 3 | 3 | 1.00 | SF |
| Baja California/Loreto | 1 | 1 | 1.00 | SM |
| **Indian Ocean** | | | | |
| Mauritius Island | 1 | 0 | 0.00 | - |
| **Atlantic Ocean** | | | | |
| Bermuda | 12 | 5 | 0.42 | BM |
| Florida | 8 | 1 | 0.13 | BM |
| Cape Verde Island | 5 | 1 | 0.20 | BM |
| Dominican Republic | 5 | 0 | 0.00 | - |
| Brazil | 4 | 1 | 0.25 | BM |
| Isla Morada/Florida Keys | 3 | 1 | 0.33 | SF |
| Cayman Islands | 1 | 0 | 0.00 | - |
| **Total** | **1,977** | **1,269** | **0.64** | **BM** |

The Angler Survey data also allowed us to examine CPUE at some of the more popular billfish fishing locations. The three areas where survey respondents fished the most days were Hawaii, Baja California (Mexico) and southern California. In recent years, Hawaii has been the location with the most reported activity. In comparison to the previous year, the 2013 Hawaii effort was down but CPUE went up. A total of 765 fishing days were reported, which was less than half the number of fishing days reported during 2012 (1,717). This reduction in effort was a result of fewer people that averaged

less time on the water. A total of 148 anglers (5.2 days per person) reported fishing off Hawaii in 2013 compared to 179 (9.5 days per person) in 2012. However, anglers reported relatively good success, which was measured by a 2013 CPUE of 0.44. This CPUE was greater than both the average for the previous five years (2008-2012, 0.42 CPUE) and the total annual average (0.38 CPUE). The major species was blue marlin, which was the species with the highest total catch for the year.

Anglers also reported good success off Baja California, Mexico during 2013, averaging over 1 billfish per fishing day (1.11 CPUE). Indeed, Baja California has been a good location by our anglers' standards, averaging an annual CPUE of 0.86. But, 2013 was exceptionally good, ranking third highest in Baja's Survey history. Moreover, Baja was the only location with a CPUE greater than 1 where the major species was striped marlin. This was the place to be in 2013 if you were targeting striped marlin.

Off southern California, where striped marlin accounted for 96% of the billfish catch, anglers reported a slight improvement in their CPUE in comparison to recent years. After three consecutive bad fishing years (2010-2012) that had the three lowest CPUEs on record, a slight increase in CPUE was reported for 2013 (0.07). However, the 2013 result was low in comparison to many past years. In the mid 2000s, a CPUE close to 0.15 was more typical.

## PACIFIC BLUE MARLIN

Blue marlin are tropically and sub-tropically distributed in the Atlantic, Pacific and Indian Oceans. They generally prefer blue water and are typically found as scattered individuals rather than in schools. This gamefish primarily feeds during the day, mainly on fishes, but is also known to consume cephalopods. It is the most common species encountered by billfish anglers off Hawaii and other central and western Pacific island nations. Historically, Atlantic and Indo-Pacific blue marlin were believed to be different species, but based on genetic evidence, blue marlin are now believed to comprise a single species worldwide.

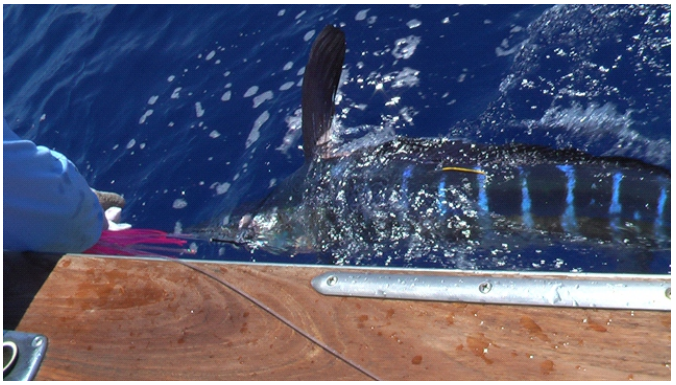
To examine the long-term trends in blue marlin CPUE within the Pacific Ocean, we tracked CPUEs from Hawaii and Baja California, Mexico **(Figure 1A)** where anglers have historically reported success targeting blue marlin. During 2013, Survey anglers reported a blue marlin CPUE of 0.28 off the coast of Hawaii. The CPUE from this location has trended upward since the inception of the Survey. Over the past ten years, the trend plateaued at a relatively high level. The average of annual CPUEs from the most recent 10 years (0.27) was greater than the 20 year average (0.24), which was greater than the total average since 1969 (0.21 CPUE).

In contrast, angler reports have indicated a downward trend in blue marlin CPUE off Baja California, Mexico. Unfortunately, the blue marlin CPUE reported off the coast of Baja during 2013 (0.02) was the lowest value reported from this area. To put this number in perspective, the total annual average blue marlin CPUE off Baja was 0.07.

The location with the highest blue marlin CPUE was Costa Rica where 11 anglers reported 46 days of effort and caught a total of 111 fish resulting in a CPUE of 2.41. Blue marlin catch was also reported from other locations including off Sonora and Colima, Mexico, Japan, Bermuda, Australia, Tonga, Galapagos Islands, Guatemala, Florida, Panama, Cape Verde Island, and Brazil.

## STRIPED MARLIN

Striped Marlin is an oceanic species found in tropical, subtropical and temperate waters of the Pacific and Indian Oceans. It generally inhabits cooler water than both black and blue marlin and feeds on fishes, crustaceans and squids. It is the most common billfish species encountered by anglers off southern California, northern Mexico and New Zealand.



*Striped marlin caught by Aaron Wendt (age 16) of Wisconsin. Aaron caught the fish in June of 2013 off the Kona coast. Photo taken by Rich Wendt.*

Striped marlin CPUEs were examined off southern California, Mexico and Hawaii **(Figure 1B)**. These three locations accounted for over 90% of the striped marlin catch. During 2013, the CPUE off southern California was 0.07, which was relatively low in comparison to historical data. Since 1969, anglers have averaged an annual striped marlin CPUE of 0.10 off southern California. However, in comparison to recent years, the 2013 result was an improvement after three historically bad years (2010-2012).

In fact, the lowest striped marlin CPUE reported from southern California was in 2011.

Off Mexico, Survey anglers had good success catching striped marlin. The 0.73 CPUE result from 2013 was the fourth highest striped marlin CPUE reported off Mexico and well above the overall annual average of 0.50. The greatest benefactors of the good striped marlin fishing were anglers that fished off the northern parts of the country. North of 22.5 N latitude, from Mazatlan to the U.S. border, anglers caught nearly 1 striped marlin per day (0.98 CPUE).

Off Hawaii, the 2013 striped marlin CPUE was 0.04, which was below the average of results from the previous 5 years (0.05) and below the total annual average (0.06). In fact, the striped marlin CPUE off Hawaii has trended down over the last ten years. During that time, anglers reported a decline in striped marlin CPUE for six consecutive years (2005 – 2010).

The good news is that the striped marlin CPUE reported from all locations was fifth highest in 30 years. The successful fishing in the northeastern Pacific outweighed the relatively poor results from the central Pacific. Other locations where anglers reported striped marlin catch included Japan, Galapagos Islands and Costa Rica.

## PACIFIC SAILFISH

Sailfish prefer tropical habitat and are abundant in eastern Pacific coastal and offshore waters from Mexico to Ecuador. Sailfish can be found in schools, often with others of similar size. They feed on fishes, crustaceans and cephalopods.

Sailfish CPUEs were up at each of the three highlighted eastern Pacific sailfish destinations compared to 2012 **(Figure 1C)**. Throughout Mexico, anglers reported 0.37 sailfish per day, which was the third highest CPUE on record. This positive result comes after nearly ten years of downward trending results from this area.

In contrast to striped marlin, sailfish are typically caught in greater numbers along the southern coast of Mexico. Survey respondents reported a sailfish CPUE of 1.00 from locations south of Mazatlan (22.5 N latitude). One sailfish per day is almost double the average annual CPUE from this area during the previous 5 years (0.56). The 2013 southern Mexico sailfish catch was the result of fishing efforts off several states including Jalisco, Colima, Guerrero, and Oaxaca.

Off Panama, 0.41 sailfish were caught per fishing day. This is a glimmer of hope considering 2013 was only one of two years since 2003 that the CPUE had not decreased from the previous year. 2012 had the lowest CPUE on record and there was almost no room for it to get worse. The 2013 value is still rather low considering that over the past 30 years anglers have averaged more than 1 sailfish per fishing day (1.17 CPUE).

Directly to the north of Panama, anglers reported good success catching sailfish off the coast of Costa Rica (1.80 CPUE). In comparison to past results, the 2013 CPUE was similar to the average of the previous 5 years (1.74) and overall annual average (1.85). Throughout all reporting locations during 2013, Costa Rica had the second highest sailfish CPUE.

The location with the highest sailfish CPUE was Malaysia. However, only one person reported fishing from this location and more responses would be necessary to determine whether the high catch rate was reflective of high sailfish relative abundance. Nevertheless, this angler's success is worth reporting. Since 2010, we have received an annual Survey report from this angler who has fished off the coast of Malaysia for several consecutive years. From 2010 through 2012, this angler averaged a CPUE of 5.42 and during 2013 he caught 6.50 sails per day. This was achieved by catching 52 sailfish during 8 days of fishing.

In addition to locations highlighted above, sailfish catch was also reported from Guatemala, El Salvador and Japan.

## BLACK MARLIN

Black marlin are typically found in the tropical, subtropical and occasionally in temperate waters of the Pacific and Indian Oceans. These fish are often caught near land masses and coral reefs and feed on fishes, cephalopods, crustaceans and small tunas when abundant.

Black marlin were caught by anglers at four locations during 2013 including Australia, Mexico, Panama and Costa Rica. Australia was the only location where this species was caught in greater numbers than other billfish (see **Table 1**) and was also the location with the highest black marlin CPUE. The Australia black marlin CPUE was 0.38 **(Figure 1D)**, which was a relatively slow year by historical standards. The result was below the average of CPUEs from the previous 5 years (0.43), and below the total annual average (0.55) and median values (0.48).

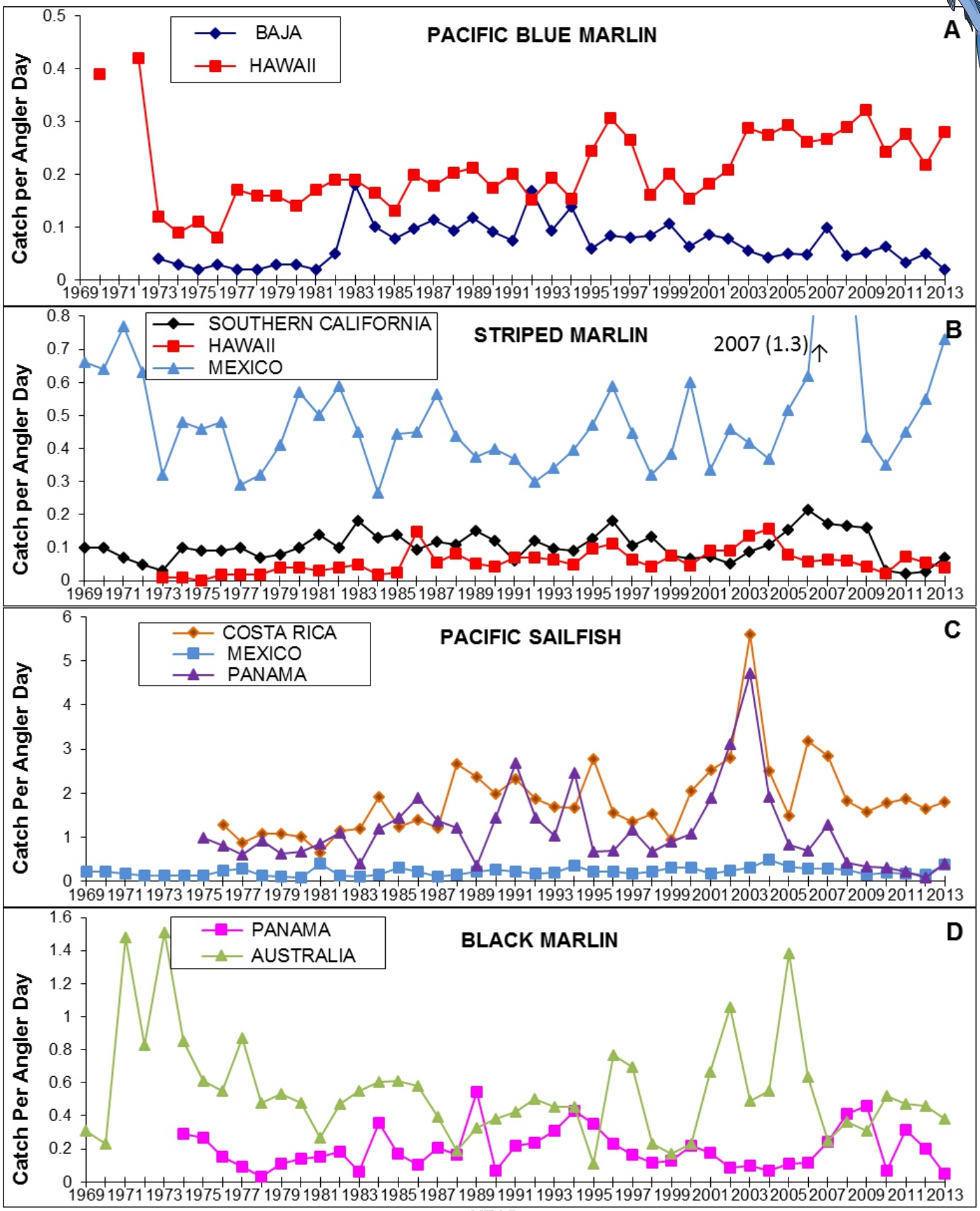



**Figure 1.** Catch-per-unit-effort (CPUE) in number of fish per angler fishing day reported by region from 1969-2013 for Pacific blue marlin (A), striped marlin (B), Pacific sailfish (C), and black marlin (D).

Off the coast of Panama, black marlin CPUE was 0.05 during 2013. This value was a result of two black marlin caught during a total of 44 days of fishing. Unfortunate for those that targeted black marlin off the Panama coast, this was the second worst CPUE for this location, and was well below the annual average (0.20). However, results from other locations in the eastern Pacific were not any better. The Panama black marlin CPUE was the highest value reported from the eastern Pacific during 2013. Black marlin captures were also reported off the coast of Costa Rica and Mexico. The CPUE off Costa Rica was 0.04 and the CPUE off Mexico was 0.01.

## SHORTBILL SPEARFISH

The shortbill spearfish is an oceanic species with a distribution across tropical and temperate Pacific Ocean waters with limited abundance near Hawaii, Central America, Mexico, and the West Coast of the United States. Shortbills are also infrequently encountered in the Atlantic Ocean, but it is thought that the primary populations and spawning grounds are within the Pacific and Indian Oceans. They feed on fishes, cephalopods and crustaceans.

A shortbill spearfish was caught off the California coast during 2013. In the past 30 years, only five other spearfish have been reported through our Survey at this location. The most recent prior report of a shortbill capture off California by a Survey angler was in 1997.

Historically, most shortbill catch has been reported off the coast of Hawaii. The Hawaii annual average shortbill CPUE was 0.08 and the annual average during the previous five years was 0.09. In 2013, anglers caught 90 shortbill spearfish off the coast of Hawaii during a total of 765 days of fishing for a CPUE of 0.12.

## BROADBILL SWORDFISH

Broadbill swordfish are a commercially important fish but historically have not been taken in high numbers by recreational anglers in the Pacific. The fishing method typically used for targeting swordfish differs from other billfish because recreational anglers typically target these fish at night. Therefore, reports of swordfish catch are usually minimal. Regardless, recreational anglers off the coast of Hawaii reported catching two swordfish.

## THE BILLFISH TAGGING PROGRAM

The SWFSC's angler-based Billfish Tagging Program began in 1963 and has provided tagging supplies to billfish anglers for over 50 continuous years. Tag release and recapture data are used to determine movement and migration patterns, species distribution, and age and growth. This volunteer tagging program depends on the participation and cooperation of recreational captains and anglers, sportfishing organizations, and commercial fishers. In collaboration with California Department of Fish and Wildlife, nearly 80,000 fish have been tagged and released **(Table 2)**.

**Table 2.** Summary of all fish tagged during 2013 with releases and recoveries for the period 1963 through 2013. The pelagic sharks and albacore were tagged during NOAA SWFSC research operations.

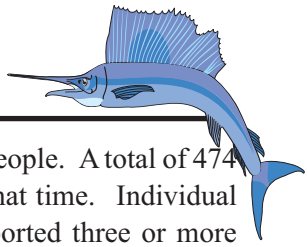
| SPECIES NAME | RELEASE 2013 | RELEASE TOTAL | RETURN TOTAL | RETURN RATE (%) |
|---|---|---|---|---|
| Pacific Blue Marlin | 351 | 12,076 | 97 | 0.80 |
| Sailfish | 228 | 9,523 | 51 | 0.54 |
| Striped Marlin | 120 | 23,355 | 348 | 1.49 |
| Shortbill Spearfish | 68 | 2,362 | 3 | 0.13 |
| Broadbill Swordfish | 1 | 523 | 17 | 3.25 |
| Black Marlin | 0 | 3,392 | 69 | 2.03 |
| Billfish, Unidentified | 0 | 4,386 | 6 | 0.14 |
| Common Thresher Shark | 261 | 2,398 | 104 | 4.34 |
| Shortfin Mako Shark | 249 | 5,988 | 361 | 6.03 |
| Blue Shark | 69 | 9,903 | 200 | 2.02 |
| Leopard Shark | 6 | 231 | 12 | 5.19 |
| Albacore Tuna | 77 | 1,007 | 33 | 3.28 |
| All Others | 3 | 3,837 | 175 | 4.56 |
| **Total** | **1,433** | **78,981** | **1,476** | **1.87** |

Our emphasis continues to focus on the skillful tagging of all billfish in the Pacific Ocean. Other species tagged over the years through various collaborations and independent research efforts are also reported as both general interest and so anglers will know to look out for tags on a number of different species. While we consider catch-and-release vital for conservation, we do not encourage the use of our billfish tags for non-billfish.

**Table 3.** Summary of billfish tagged during 2013, by region.

| Pacific Ocean | | |
|---|---|---|
| Southern California | Striped Marlin | 5 |
| | Pacific Blue Marlin | 1 |
| Baja California / Baja California Sur | Striped Marlin | 86 |
| | Sailfish | 2 |
| | Pacific Blue Marlin | 1 |
| Acapulco - Ixtapa - Zihuatanejo, Guerrero | Sailfish | 224 |
| | Striped Marlin | 2 |
| | Pacific Blue Marlin | 2 |
| Hawaii | Pacific Blue Marlin | 338 |
| | Shortbill Spearfish | 67 |
| | Striped Marlin | 27 |
| | Broadbill Swordfish | 1 |
| Samoa | Pacific Blue Marlin | 2 |
| | Sailfish | 2 |
| Unknown Location | Pacific Blue Marlin | 7 |
| | Shortbill Spearfish | 1 |
| **Total** | | **768** |

We are pleased to report that a total of 768 tags were released on billfish **(Table 3)**. The majority of these tags were released on blue marlin. In fact, blue marlin has been tagged



more than any other billfish species for 13 consecutive years. However, this has not always been the case. Overall, more striped marlin have been tagged than any other species, and between 1963 and 2001, striped marlin were tagged more than other billfish species during all but 5 reporting years.

The shift in the major (tagged) species occurred during 2000. It was the result of a change in the location of the greatest tagging effort. The SWFSC Tagging Program started in southern California and the outreach effort in the early years was concentrated around southern California and Baja California, Mexico where striped marlin are the dominant billfish species. However, in recent years the focal point of the tagging effort has moved to Hawaii where blue marlin is the billfish species that is most commonly caught by recreational anglers.

Similarly, a push to promote tagging efforts in central and southern Mexico has resulted in a recent increase in sailfish tag releases. Since 2011, the number of sailfish tagged has more than tripled each year and the location where this effort is concentrated is Zihuatanejo, Mexico. Indeed, the Survey results indicated a jump in sailfish CPUE occurred during 2013. But, the large number of sailfish tagged is not the result of better catch rates. The increased sailfish tagging effort was the result of a group of dedicated anglers and a couple of devoted captains (mentioned later in this issue) who are successfully tagging and releasing a lot of fish. Well done!

Also worth noting is the tagging effort from southern California. Catching billfish off the California coast can be very challenging because the conditions are inconsistent and opportunities can be limited. However, corresponding with an increase in the striped marlin CPUE in 2013 **(see Figure 1B)** was an increase in striped marlin tag releases. A total of six tags were released; five tags were released on striped marlin and one on a blue marlin. The southern California tagging may not appear a great feat, but certainly notable given that these six releases were more than the total number of billfish tagged off the California coast during the previous three years combined. Anecdotal reports during 2014 indicated that there were good conditions off southern California during a relatively warm water year. Keep an eye out for results in next year's Newsletter.

## TOP ANGLERS AND CAPTAINS ACKNOWLEDGMENTS

### Recreational Anglers

We appreciate the cooperation of anglers and captains who tag and release billfish. The tagging effort during 2013 was the result of contributions from many people. A total of 474 anglers released a billfish tag during that time. Individual recognition of the 54 anglers who reported three or more billfish tag releases is presented in **Table 4.**

For the third consecutive year, Carol Herren deployed the most billfish tags amongst the recreational anglers (not including captains). Carol released a total of 18 tags off Hawaii on a combination of species including blue marlin, shortbill spearfish, and striped marlin. Steve Spina, the 2010 top angler, was also again amongst the top anglers in 2013 and made another great contribution by releasing 10 tags off Hawaii.

**Table 4.** Names of anglers tagging three or more billfish during 2013, by area.

| ANGLER NAME | BILLFISH TAGGED |
|---|---|
| **Baja California / Baja California Sur** | |
| DAVID BUTLER | 8 |
| MARK BOWMAN | 6 |
| LARRY PEABODY | 5 |
| DAN MUSLIN | 5 |
| RICHARD HAMILTON | 5 |
| JEFFREY BUTLER | 4 |
| MARIE BOWMAN | 4 |
| ANN THOMPSON | 4 |
| ABBOTT AYLOUSH | 4 |
| KAITLYN PILMAN | 3 |
| LANE WALTER | 3 |
| REX BUTLER | 3 |
| **Acapulco - Ixtapa - Zihuatanejo, Guerrero** | |
| CARL TAYLOR | 15 |
| KALLE SJOLUND | 10 |
| JACOB STRORUP | 9 |
| JIM HEIKKINEN | 7 |
| RICK REINERTSEN | 7 |
| NORMAN COOK | 7 |
| JOHN WILKINSON | 7 |
| CHARLES STIRLING | 7 |
| RON HUBBARD | 6 |
| BRANDON EVANS | 6 |
| GERMAN PORTILLA | 5 |
| DORRIS ALEXANDER | 5 |
| VICTOR STOLTZ | 5 |
| THOMAS HARRIS | 5 |
| FLEMMING KJELDSEN | 4 |
| LARS UNODSEN | 4 |
| RICH MUCKIE | 4 |

**Table 4.** Names of anglers tagging three or more billfish during 2013, by area (Cont'd).

| | |
|---|---|
| KURT BENTZ | 4 |
| SHERRY COOK | 4 |
| BALIATICO | 4 |
| TRACY LOUTITT | 3 |
| ROBERT LEONARD | 3 |
| RICK LEONARDI | 3 |
| MARK CADMUS | 3 |
| JANEEN SERINO | 3 |
| FREDERICK PRESTON | 3 |
| BRAD STUCKEY | 3 |
| **Hawaii** | |
| CAROL HERREN | 18 |
| STEVE SPINA | 10 |
| CRAIG LINDNER JR. | 6 |
| MIKE JACOBSEN | 6 |
| JOHN PATTERSON | 5 |
| JOHN GAMROT | 4 |
| CRAIG LINDNER | 4 |
| CHRIS GAMROT | 4 |
| JEFF BROOKS | 3 |
| DONALD BRANDT | 3 |
| JULIO FERNANDEZ | 3 |
| RANDY WEIH | 3 |
| RODNEY CARROLL | 3 |
| RONALD C. MILLER | 3 |
| CLAY LAWRENCE | 3 |

Many anglers also actively tagged billfish off the coast of Mexico during 2013. The majority of tagging occurred in two locations, Zihuatanejo and Baja California. Carl Taylor topped the Mexico list by tagging 15 sailfish off Zihuatanejo. In close competition, and one of only four anglers who tagged ten or more fish during 2013, was Kalle Sjolund, also tagging sailfish off the coast of Zihuatanejo. To the north of Zihuatanejo, the top tagger off the coast of Baja was David Butler. David tagged a total of eight (8) striped marlin.

## Captains

Charter and private boat captains who support billfish tag and release (and catch and release) play an important role by supporting ethical angling and conservation stewardship of the marine environment. They set an example by demonstrating skillful release of their billfish catch. A total of 97 captains reported tag and release of billfish with their anglers and clients. We gratefully acknowledge those 52 captains who assisted with tagging three (3) or more billfish in specific regions **(Table 5).**

**Table 5.** Names of captains tagging three or more billfish during 2013, by area.

| CAPTAIN | BILLFISH TAGGED |
|---|---|
| **California** | |
| STAN ECKLUND SR. | 3 |
| **Baja California / Baja California Sur** | |
| RICHARD HAMILTON | 35 |
| DAN MUSLIN | 20 |
| MIKE SHROSBREE | 7 |
| HAROLD SCHRAM | 5 |
| VINCENTE COSIO | 5 |
| ROSARIO COTA | 4 |
| KARL KOGLER | 3 |
| **Acapulco - Ixtapa - Zihuatanejo, Guerrero** | |
| SANTIAGO VALDOVINOS | 105 |
| ADAN VALDOVINOS OLEA | 67 |
| ARMANDO ARCINIEGA | 29 |
| (CHIRO) ISIDRO BARRAGAN | 7 |
| JOAQUIN VALLE | 6 |
| JOSE | 6 |
| SALVADOR ARCINEGA | 3 |
| **Hawaii** | |
| KEN FOGARTY | 40 |
| JEFFREY FAY | 31 |
| TEDDY HOOGS | 28 |
| MARLIN PARKER | 23 |
| DAVID CRAWFORD | 19 |
| JOHN BAGWELL | 19 |
| BRUCE HERREN | 18 |
| DENNIS CINTAS | 17 |
| JAMES DEAN | 17 |
| ROBERT C. (BOB) SYLVA JR. | 15 |
| KERWIN MASUNAGA | 15 |
| STEVE EPSTEIN | 13 |
| CHRIS BAYS | 12 |
| CHUCK WILSON | 11 |
| TOM CASEY | 8 |
| KEVIN HIBBARD | 8 |
| GABE HEFLIN | 8 |
| ROBERT HUDSON | 7 |
| BRIAN (CHIP) VAN MOLS | 7 |
| CHUCK WIGZELL | 6 |
| CHRIS WONG | 6 |

**Table 5.** Names of captains tagging three or more billfish during 2013, by area (Cont'd).

| | |
|---|---|
| MCGREW RICE | 6 |
| BILL CASEY | 5 |
| DON STUTHEIT | 5 |
| GUY TERWILLIGER | 5 |
| SCOTT M. FULLER | 4 |
| NEAL ISAACS | 4 |
| TIM HICKS | 4 |
| MIKE DEREGO | 4 |
| KEVIN M. HOGAN | 4 |
| KENT MONGREIG | 4 |
| CARL SHEPARD | 4 |
| LARRY PEARDON | 3 |
| ROB ELLYN | 3 |
| CHRIS CAUGHON | 3 |
| WILLIAM LAZENBY | 3 |
| BRANDON MCKINLEY | 3 |

Santiago Valdovinos, captain of the fishing boat *Gitana*, skippered during 105 tag releases! Until 2013, only two captains had helped their clients release over 100 tags in a single year. The most recent was in 1983, thirty years ago. Santiago fishes out of Zihuatanejo and has led the tagging surge from this part of the country. From his vessel, most fish tagged were sailfish along with some blue marlin.

Not to be overshadowed, a couple other captains, Adan Valdovinos Olea and Armando Arciniega, were also tagging and releasing an impressive number of fish off the coast of Zihuatanejo. Adan helped his clients tag and release 67 billfish and Armando helped his clients tag 29 fish. Both of these captains had tremendous success tagging billfish. In fact, only a total of seven captains, including those already mentioned, tagged over 25 billfish during 2013. Further north, off the coast of Baja California, Mexico, Richard Hamilton skippered his clients to 35 tag releases. Dan Muslin helped tag the second highest number from this location with 20. Both captains had good success with striped marlin. Directly across the border, Stan Ecklund tagged 3 striped marlin off southern California. In fact Stan accounted for half the tags released from the area!

For the third consecutive year, Ken Fogarty was the top captain off the coast of Hawaii; with his clients he tagged 40 billfish. Additionally, several captains tagged over 20 billfish off Hawaii. This includes captains that, for several years, have been successfully tagging and releasing billfish including Jeffrey Fay, Teddy Hoogs, and Marlin Parker. These captains combined to tag three different billfish species including blue marlin, shortbill spearfish, and striped marlin.

It is important that all Billfish Tagging Program report cards be sent in as soon after tagging as possible. **Please ensure that all fields are filled out when returning tag cards.** This would be a great time to check your tackle boxes and make sure that all Billfish Tagging Program report cards have been sent to our office.

## TAG RECOVERIES

Tag recoveries are a vital part of the Tagging Program because they allow us to track movements of highly migratory billfish species and monitor growth and mortality rates. In past years, as many as 27 recoveries have been recorded in a single year. Twice, during the 1990s, over 20 tags were recovered and reported. However, in recent years those numbers have significantly dropped and the average number of recoveries over the last ten years is less than six. We encourage all anglers to report tag recoveries, including those that are re-released with or without new tags.

**Table 6.** Tag recovery information for 2013.

| TAGGER / CAPTAIN | RELEASE DATE | RELEASE LOCATION | RECOVERY DATE | RECOVERER | RECOVERY LOCATION | DAYS FREE | NAUTICAL MILES - DIRECTION TRAVELED |
|---|---|---|---|---|---|---|---|
| **Pacific Blue Marlin** | | | | | | | |
| JACK LEISHER / PAUL CANTOR | 7/7/2013 | Hawaii | 8/11/2013 | GENE VANDERHOEK | Hawaii | 36 | 16 - SE |
| SAM KOSSAK / CHRIS WONG | 8/3/2013 | Hawaii | 9/8/2013 | DON DANNIS | Central Pacific | 37 | 885 - SE |
| N/A - Release card not received | N/A | N/A | 6/2/2013 | DAVID BENSKO | Hawaii | N/A | N/A |
| **Pacific Sailfish** | | | | | | | |
| CHRIS GAST / SANTIAGO VALDOVINOS | 1/10/2013 | Zihuatenejo, MX | 2/7/2013 | THOMAS ADAMO | Zihuatenejo, MX | 29 | 4 - E |
| CRYSTAL VILORIO / ADAN VALDOVINOS | 11/23/2013 | Zihuatenejo, MX | 11/28/2013 | DALE BURETT | Zihuatenejo, MX | 6 | 10 - SE |

Five recoveries were reported in 2013, including three Pacific blue marlin and two sailfish **(Table 6)**. Two of the blue marlin were recaptured around the Hawaiian Islands. The first was recaptured by Gene Vanderhoek after it had been at liberty for 36 days. This fish was tagged off Hawaii by Jack Leisher and Paul Cantor and travelled a net minimum distance of only 16 nautical miles. David Bensko recaptured another tagged blue marlin near Hawaii. Unfortunately, the release card was never returned and the movement and time at liberty cannot be determined. In contrast to these two recaptures, a blue marlin recapture reported by Don Dannis occurred far from the Hawaiian Islands. The fish was tagged by Sam Kossak and Chris Wong off Hawaii and proceeded to move (at a fast rate) a net minimum distance of 885 nautical miles in only 37 days.

The distances travelled by recaptured sailfish were relatively short. Both recaptured fish were recovered within 10 nautical miles of their release location. However, neither fish spent more than a month at liberty. The fish were tagged aboard trips with Santiago and Adan Valdovinos, which was not surprising given their huge tagging effort during 2013. Thomas Adamo caught one of these tagged fish in early February. The other was recaptured by Dale Burett in November only five days after it was tagged.

Billfish tagging off Ixtapa, Mexico. Photo by Hunt Buckley.

## SPOTLIGHT ON THE IGFA GREAT MARLIN RACE

The International Game Fish Association (IGFA) Great Marlin Race (IGMR) was first conceived at the Hawaiian International Billfish Tournament (HIBT), which is the longest running IGMR event. It is a collaboration between the IGFA, Stanford University and anglers that uses a unique framework to fund research on billfish around the globe. IGMR gives anglers the opportunity to sponsor pop-up satellite archival transmitting (PAT) tags to be deployed on marlin during tournament events. When the tags pop up, the one that shows up the furthest from where it was tagged is declared the winner. The tag's sponsors get free entry into the following year's tournament. The program was so successful that it became part of the annual HIBT, and raised the interest of other tournaments, as well as the IGFA, which officially adopted the program in 2011. Since its inception, the IGMR has deployed more than 200 satellite tags on billfish, with events in every ocean basin.

The unique IGMR partnership has allowed researchers to deploy PAT tags on several billfish species including blue marlin, black marlin, white marlin, striped marlin and sailfish at twenty-four tournaments around the world over the last four years. Cumulatively, these tags have recorded 8,829 days of data on the temperature and depth preferences and movements of tagged fish, with fish moving a total point-to-point distance of 64,371 nmi. This dataset has provided great insight into the unique patterns of movement and habitat use of billfish within every ocean basin. Tagging has been relatively limited in the eastern North Pacific; however, that is changing. In the last several years there have been IGMR events in Los Suenos Costa Rica, Chinandega Nicaragua, and most recently at the Master Angler Billfish Tournament (MABT) in Southern California.

The MABT was the first IGMR event in the California Current. The 2014 tournament was the 33rd annual event run by the Balboa Angling Club (BAC). Anglers from the BAC had been having a good year before the tournament. The first marlin recorded for the club was August 2nd as warm waters filled the Southern California Bight during the summer and fall of 2014. The MABT was held September 12th and 13th. The fishing kicked off at 6am on the 12th and in just over 2 hours, the first fish, a striped marlin, was hooked up and released with an IGFA satellite tag as part of the Great Marlin Race! A total of two IGMR tags were deployed during the tournament.

These and past IGMR tag releases have provided scientists with an amazing opportunity to study the movements and habitat use of these important, pelagic fishes. It is our hope that by further understanding how these amazing fish use their oceanic habitats, and what biological and physical factors influence their distribution, we will be better able to manage and conserve these important marine resources.


Photo credit goes to Kevin Nakamaru, Fishingnorthernlights.com.

# Tagging Guide

## 1. BEFORE YOU CATCH YOUR FISH:

First decide if you plan to tag and release any fish caught. If so, circle hooks are preferred because they reduce deep or foul hooking when bait fishing. We recommend that you do not use double rigged J hooks if you plan to release your catch.

## 2. WHILE FISHING:

Never attempt to tag a fish while it is jumping or thrashing about. Bring your fish to leader as quickly as possible but wait until the fish is calm and swimming beside the boat before tagging. **Check for previous tags!**

## 3. TAGGING:

Tag the fish as it is being towed alongside the boat by inserting the tag in the back muscle below the tallest part of the dorsal fin. Avoid the gills, head, and stomach. Take care not to allow your fish to injure itself on the vessel's transom or hull.

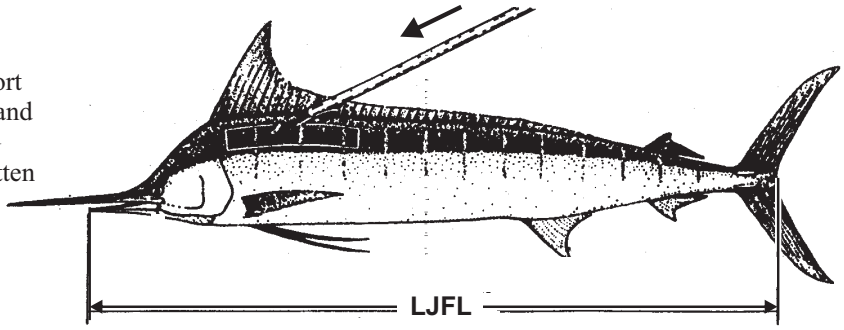
## 4. RELEASING:

Revive the fish by slowly towing it through the water, allowing water to flow over the gills until its normal color returns and it begins to swim on its own. Remove the hook with a good pair of pliers, or if deeply hooked in the throat or stomach, release it by cutting the leader as close to the hook as possible.

## 5. COMPLETE THE BILLFISH TAGGING REPORT CARD:

Fill out the yellow Billfish Tagging Report card completely and as accurately as possible indicating latitude and longitude, date of release, estimated length (lower jaw-to-fork length; LJFL) and estimated weight of the fish. Include name and mailing address of the angler and boat captain and other remarks as appropriate. Return cards promptly to us at the Southwest Fisheries Science Center.

**PLEASE NOTE**: Make your tagging effort count. Tag and release your fish skilfully and return the yellow **BILLFISH TAGGING REPORT** promptly. Though easily forgotten in the heat of battle and glow of success, returning the card is the most critical and final step in tagging your fish.




- Fill out the card completely and as accurately as possible.
- Indicate latitude, longitude and locally known fishing area.
- Estimate the length of the fish as "tip of lower jaw-to-fork" length (LJFL).
- Estimate weight of the fish.
- Include any remarks, club name and complete address of the angler and the boat captain.
- Return cards promptly to the Southwest Fisheries Science Center. Tagging is of no value unless this *Billfish Tagging Report* card is returned. Postage is paid if mailed in the U.S.A.

### COMPLETING THE BILLFISH TAGGING REPORT CARD

NOAA, National Marine Fisheries Service
BILLFISH TAGGING REPORT
PLEASE FILL IN DETAILS AND MAIL TODAY.

If mailing outside USA, postage must be affixed
Please return card, Otherwise tagging is of no value

TAG #: A33333

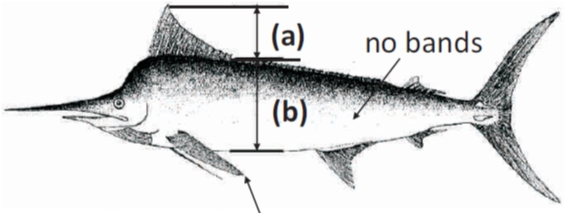
Latitude: 33° 14' N Longitude: 118°14' W
Locality: East End Catalina Is. CA
Species: Striped Marlin Date: 6/10/98
Estimate length (tip of jaw to fork of tail): 72 inches. Weight: 140 lbs.
Fish Condition: Good Bait type: Plastic Lure
Angler: Bill Fish Fight time (minutes): 23
Address: P.O. Box 271 La Jolla, CA Zip: 92038
Club: Anglers Club
Captain: Capt. Joe Dew Boat name: Good Grief
Address: P.O. Box 271 La Jolla, CA Zip: 92038

Response to this form is voluntary.
OMB 0648-0009, expiration date 08/31/2001
NOAA 88-162, 2/99

# Identification Guide

## Black marlin

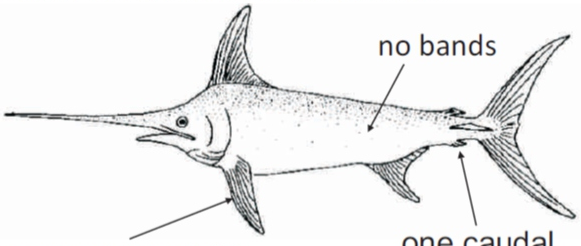
dorsal fin height (a) about
half body height (b)




pectoral fins rigid
cannot flatten against body

## Swordfish

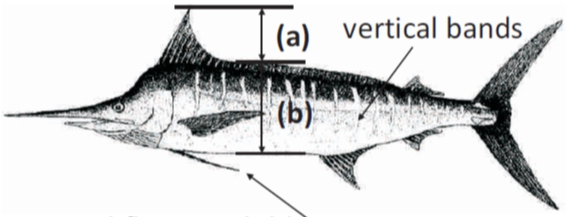
sword-like bill with smooth surface




* no pelvic fins present

## Blue marlin

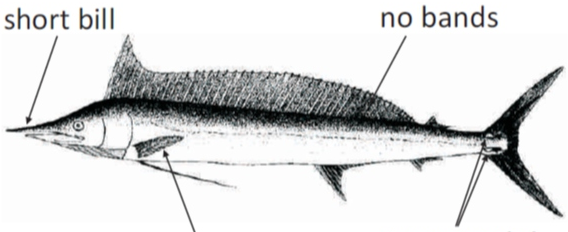
dorsal fin height (a) half to
three quarters body height (b)




pectoral fins not rigid
can flatten against body

* body more stout than striped marlin

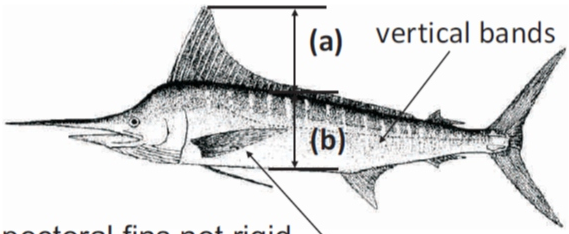
## Shortbill spearfish




short pectoral fins
not rigid

## Striped marlin

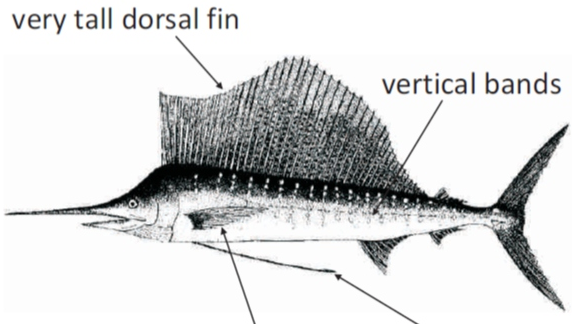
dorsal fin height (a) greater
than body height (b)




pectoral fins not rigid
can flatten against body

* body more compressed than blue marlin

## Sailfish

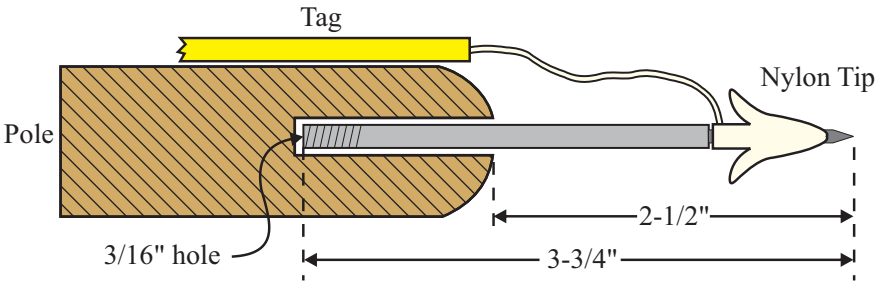


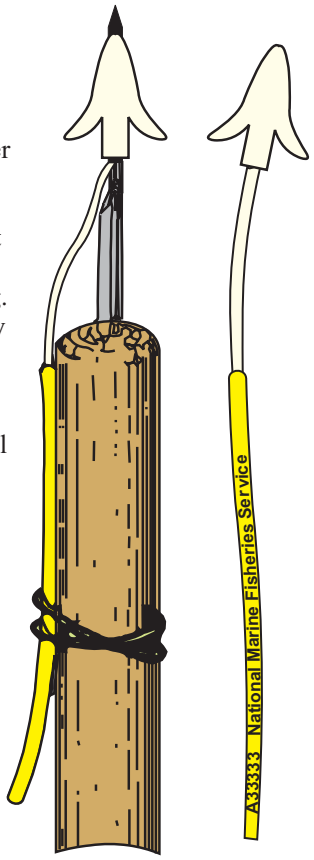

pectoral fins not rigid
can flatten against body

## CONSTRUCTING THE TAGGING POLE

It is important that the billfish tag be applied properly. Tag location, angle, and depth are critical to successful tagging. For striped marlin of 100 to 200 lbs, the tag should be inserted about 2.5 inches deep just below the tallest part of the dorsal fin. For larger fish, such as blue and black marlin, the tagging applicator pin may be 3.5 inches. Conversely, if you are tagging small, narrow fish like sailfish and shortbill spearfish, then it would be better to shorten the pin. Manufactured tagging poles are available at most retail sportfishing stores. It is important to check the length of the applicator pin installed on these poles to ensure the length of the tip matches the fish you are seeking. Some manufacturers produce tagging poles that have pin lengths that are adjustable by moving the stopper.

If you construct your own tagging pole, an old wooden broom or mop handle about five feet long works very well. A hole should be drilled with a 3/16 inch or No. 16 drill bit to a depth of 1.25 inches for the applicator tip (see diagram below). Use a good grade epoxy to secure the applicator pin and seal out saltwater. **Please contact our office if you need an applicator tip.**

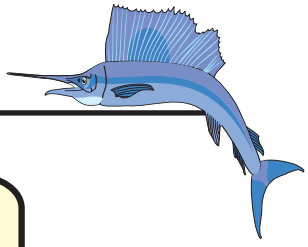



### PAPERWORK REDUCTION ACT NOTIFICATION

NOAA Fisheries needs the information reported on Billfish Tagging Cards and the International Billfish Angler Survey for the conservation and management of fishery resources. The information will be used for billfish research. Public reporting time and effort for the Billfish Angler Survey card is estimated to average five minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. You can send comments regarding this burden estimate to the SWFSC, 8901 La Jolla Shores Drive, La Jolla, CA 92037. The information submitted will become public record. Notwithstanding any other provision of the law, no person is required to, nor shall any person be subject to a penalty for failure to comply with collection of information subject to the requirements of the Paperwork Reduction Act.

**BILLFISH ANGLER SURVEY** cards for fishing in the **2014** calendar year were mailed in early 2015. If you have not already completed the survey, please fill it out and return the post-paid form as soon as possible. Additional 2014 Angler Survey forms are available to all billfish anglers by contacting this office or they can be downloaded from our website. See http://swfsc.noaa.gov/FRD-Billfish/. We update our mailing list each year, so if you wish to continue to receive the Billfish Newsletter but did not fish, please indicate "NO FISHING" on the Billfish Angler Survey form and return it to the SWFSC and your name will be retained on our mailing list. Your continued response to the Billfish Angler Survey is appreciated and is critical to monitoring changes in abundance of billfish stocks important to recreational and commercial fisheries.



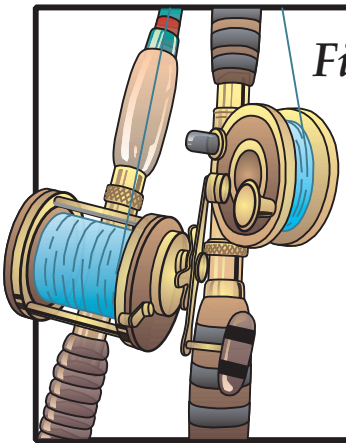
## SEND US YOUR PHOTOGRAPHS

**Cover photo: The winning cover photo was taken by Captain Kevin Hibbard and submitted by Ron Hansen. Kevin Hibbard also took the cover photo of last year's Billfish Newsletter. This year's photo captures a blue marlin that was caught by Ron Hansen off Hawaii in 2011.**

We are looking for good photographs of billfish for the cover of the next Billfish Newsletter. Color or black-and-white photos of billfish and/or fishing activities are appropriate. Digital photos are preferred, but we also accept hard copy. We would appreciate you sharing your photos and will give you full credit in the 2014 issue.


## ACKNOWLEDGMENTS

The information reported here would not be possible without the cooperation of thousands of anglers and volunteers who support these investigations. Their efforts and assistance are greatly appreciated. This and past *Billfish Newsletters* and the 2014 Angler Survey form can also be accessed through the SWFSC's webpage at http://swfsc.noaa.gov/FRD-Billfish/. We welcome reader comments and suggestions concerning the content of the *Billfish Newsletter.*

*Fine fishing for now and forever!*


*James Wraith and Suzanne Kohin,*
*Fishery Biologists*

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La Jolla, CA 92037-1509
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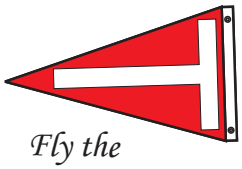
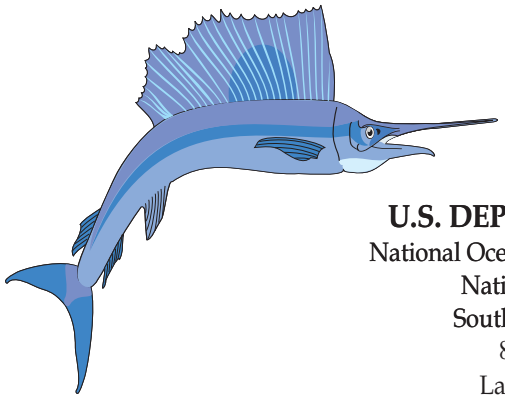
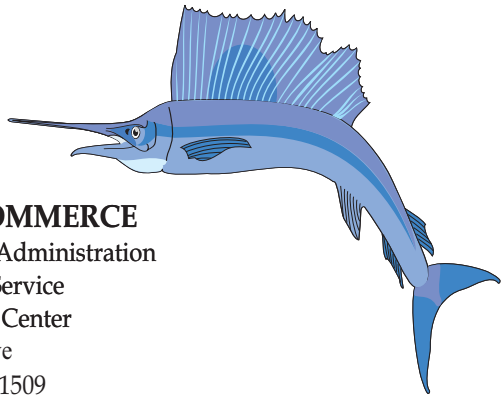


*Fly the Tagging Flag!*



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